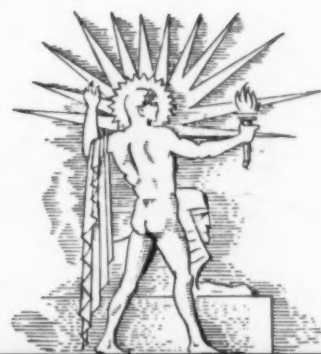


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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



May 21, 1938

Southclaw

See Page 332

A SCIENCE SERVICE PUBLICATION

## Do You Know?

Pheasants are flourishing in 27 states, and are expected to provide good hunting in at least 20.

Judging by their size, the biggest dinosaurs may have eaten 500 to 1,000 pounds of food a day.

It costs five times as much to stop an automobile from a speed of 60 miles an hour as from 10 miles an hour.

A new British process to keep wool from shrinking is gaining wide interest among textile manufacturers in England.

The Osage orange tree was so valued by Osage Indians as a source of wood for war clubs and bows that they are said to have made long trips in search of it.

To find out where a salmon would deliver a letter, Norse scientists attached a note in a cylinder to a salmon's fin; and the fish arrived in northern Russia, 2800 miles away.

Diabetes is a more common cause of death in the United States than in any other nation, a record which is blamed in part on rich food, lack of exercise, and nervous tension of life.

A University of Michigan psychologist has compiled a list of 6,000 words associated with various vocations, which he uses in vocabulary tests in gauging aptitude of individuals for certain careers.

## SCIENCE NEWS LETTER

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## QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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Can the mental disease dementia precox be cured? p. 334.

### PSYCHIATRY—PSYCHOLOGY

What experience of mental hospitals points to a way of avoiding war? p. 332.

### SOCIOLOGY

Is city life ideal for human culture? p. 328.

Dead blood cells give a bruise its black-and-blue color.

Babylonians used clay envelopes for clay documents; but in later times paper notes were first enclosed in envelopes in the seventeenth century.

A new device for boiling and sterilizing surgical instruments is a glass enclosed electric coil that produces boiling water in 12 seconds and turns it to steam in three more seconds.

German canners have found a satisfactory way of making a transparent plastic container for preserved foods.

Germany has 560 museums "for the preservation of German culture" in German-speaking territories outside the Reich.

As many as 15 ingredients may go into medicine concocted for a disease by a medicine man of the Potawatomi Indian tribe.

Academy of Sciences, W. H. Howell, Vice-President and Chairman of Executive Committee, Johns Hopkins University, Baltimore, Md.; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; Harlow Shapley, Director, Harvard College Observatory, Cambridge, Mass. Representing National Research Council: C. G. Abbot, Secretary, Smithsonian Institution, Washington, D. C.; Harrison E. Howe, Editor of Industrial and Engineering Chemistry, Washington, D. C.; Ross G. Harrison, Director, Osborn Zoological Laboratory, Yale University, New Haven, Conn. Representing Journalistic Profession, John H. Finley, Editor, New York Times; J. Edwin Murphy, Managing Editor, Baltimore Evening Sun, Baltimore, Md.; O. W. Riegel, Director, Lee School of Journalism, Washington and Lee University, Lexington, Va. Representing E. W. Scripps Estate, Harry L. Smithton, Treasurer, Cincinnati, Ohio; Warren S. Thompson, Miami University, Oxford, Ohio.

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PHYSIOLOGY—CHEMISTRY

# New Red Pigment of Liver is Giant of Body's Chemicals

**New Heavy-Weight Was Discovered as a By-Product of Research Seeking Enzymes in Liver of the Horse**

**A** NEW, and yet unidentified, red pigment, which is a super heavy-weight among the body chemicals of the higher animals, has just been isolated at Yale University, it was disclosed at the meeting of the New York Section of the American Chemical Society.

The red pigment, having a molecular weight more than 50 times as great as familiar hemoglobin in the blood, was found in a research seeking enzymes in horse liver. Dr. Kurt G. Stern, who reported the discovery, and Dr. R. W. G. Wyckoff, both of Yale, collaborated in the studies.

"As far as we can tell," Dr. Stern said, "this red pigment is different from any other substance, from liver or from other sources, yet described." Chemically speaking, the new red pigment—having the enormous molecular weight of 3,000,000 to 4,000,000—has not yet revealed features which would permit its classification among any known class of chemical compounds.

The new super giant of the animal body was found as a "by-product" of research seeking a pure solution of cata-

lase, an important body enzyme. An air-driven ultra-speed centrifuge, whirling rapidly, was used to separate the liver red pigment from the brown catalase.

The pigment is far larger, in its molecular size, than anything previously encountered in the bodies of higher animals. Only the copper-containing blood pigment of invertebrates, known as hemocyanine, may reach similar proportions, Dr. Stern indicated.

The biological function of the red liver pigment is yet obscure, he added. But it is assumed that it is connected with the use of oxygen by the animal body because it can be reduced to a clear, colorless form. The red color, however, appears to be a property of the large molecule itself and not of an impurity.

The molecular weight of catalase, the enzyme sought in the original research, was determined by the Yale scientists to be between 250,000 and 300,000, or four times larger than hemoglobin, the respiratory pigment of red blood corpuscles.

*Science News Letter, May 21, 1938*

ASTRONOMY

# New Star May Be Nearest or Next Nearest to the Earth

**A** STAR that is either the nearest or the second nearest star to the earth has been discovered at Yerkes Observatory of the University of Chicago.

It is named Wolf 424 and it has a visual magnitude of 12, which means that, close as it is, it can be viewed only with a powerful telescope.

Prof. G. P. Kuiper in recent months has obtained spectra of many faint stars of large proper motion, that is, they change their positions considerably in relation to other stars. He used a fast one-prism spectrograph attached to the 40-inch Yerkes telescope.

Star Wolf 424 was found to have what astronomers call a very late M type spectrum which is duplicated in the heavens only by Wolf 359 star. This is the intrinsically faintest star known. The distance of Wolf 359 is eight light years (two and a half parsecs), that is, it takes light traveling 186,000 miles per second only eight years to travel from that star to the earth.

But the Wolf 424 star newly observed is found to be 1.17 magnitudes brighter. Computations show that its probable distance would therefore be about 3.7 light years.

This is closer than famous Alpha Centauri, 4.1 light years away. If Wolf 424 is an unresolved binary star, however, its computed distance from earth might be somewhat larger than that of Alpha Centauri, which is known to be connected with Proxima Centauri, considered usually a part of the same star system.

*Science News Letter, May 21, 1938*

ENGINEERING

# Lamp Companies Announce New Fluorescent Lamps

**A** NEW type of electric lamp, that uses ultraviolet light and fluorescent chemical-coated walls to produce white or colored light with an efficiency ranging up to 200 times that of present-day filament lamps, was announced simultaneously by the Westinghouse Electrical and Manufacturing Company and the General Electric Company. The new lamp was demonstrated before members of the New York Electrical Society, the American Institute of Electrical Engineers, and the Illuminating Engineering Societies.

Differing entirely in principle from existing types of lamps in general use, the new lamps convert invisible ultraviolet light into white or colored light through the phenomenon of fluorescence. The efficiency of the new bulbs is far



**COOL LIGHT**

Fluorescent lamps, as much as 200 times as efficient as today's hot incandescent lights, have just been made available by two of America's largest lamp manufacturers. Invisible ultraviolet light generated inside the tubes bombards chemical-coated walls, which fluoresce, giving out light but practically no heat.



higher than that of the incandescent lamp, one type of the new lamp producing 60 lumens of light per watt in the 30-watt size, while the equivalent standard bulb produces only three-tenths of a lumen per watt.

Ward Harrison, of General Electric Company, and S. G. Hibben, of the Westinghouse Manufacturing Company, described the lamps at the meeting.

One of the new lamps, Mr. Harrison claimed, produces the nearest approach to natural daylight ever achieved by any artificial illuminant.

Chemical powders coating the walls of the bulbs contain the secret of the new means of lighting. Mercury vapor at low pressure, when an electric current is passed through it, produces invisible ultraviolet radiation with a high degree of efficiency. The ultraviolet radiation, bombarding the chemical powders, is re-radiated as visible light, its color depending upon the particular chemicals used. This transfer is also extremely efficient. The great heat losses of the present type of incandescent lamp are avoided.

*Science News Letter, May 21, 1938*

#### GEOLOGY

## Continents Did Not Drift, Fossil Evidence Shows

### Distribution of Fossil Land Animals Indicates Migration Was From the North, Not By Southern Seas

**D**RIFTING continents and great transoceanic land bridges were not necessary to explain the distribution of life during the earth's past ages when coal was forming, Dr. Charles L. Camp, University of California geologist, has concluded.

Distribution of fossil land animals does not support the theory of continental drift, but strengthens the idea that the continents have always been land and the oceans always full of water.

To explain the distribution of plants and animals of past ages, geologists have evolved a number of theories.

1. That in early times there was only one continental land mass, which broke up. The fragments, gradually evolving into our present continents, drifted slowly around the earth, carrying with them the primal animals, ancestors of some of our present forms.

2. That there were great land bridges extending across the South Atlantic, over which animals and plants migrated from continent to continent. These bridges, according to theory, foundered into the oceans not so many millions of years ago.

3. That the continents have always had about their present shape and distribution, with occasional submergence of some low-lying areas, and upraising of shallow sea floors to become land.

Discussing his evidence, gained from a study of the fossil land animals of the continental areas, Dr. Camp finds that

they probably migrated from Eurasia to America over northern land connections, and that neither drifting continents nor land bridges in areas that are now deep sea are needed to explain their distribution.

Using only large land animals, which cannot swim long distances or be carried by birds or wind, as evidence, Dr. Camp solves the problem of conflicting evidence. Long ago it was shown that the plant and water-animal life of Africa greatly resembled similar life forms in South America, and on this resemblance many geologists contended for continental drifting and land bridges. Other geologists pointed out that birds can carry plant seeds, winds carry fern spores, and that water animals generally travel by swimming, needing no land bridges or drifting continents to explain their presence in Africa and South America.

Southern amphibians and reptiles, according to Dr. Camp's interpretation of the fossil evidence, came to the southern continents from the north, which, throughout much of geologic history, was an interconnected series of continents. Southern fossil types, then, came from the same place—the north—suggests Dr. Camp, and did not cross over from one continent to another on land bridges, or drift across the Atlantic on a "foot-loose" continent.

*Science News Letter, May 21, 1938*

Artificial rubber can be made from tomatoes, according to an Italian report.

#### SOCIOLOGY

## World's Giant Cities Seen "On Downward Path"

**T**HE WORLD's greatest cities are on the downward path. Far from being good and wonderful in proportion to size, they are mechanized and expensive giants, crushing rather than serving the millions within their grasp.

This is the warning sounded by Lewis Mumford, sociologist, in a startling new volume, "The Culture of Cities." In a sweeping survey of city life from the tenth century onwards, he finds that vaunted improvements have been mainly for the worse. Our most pressing task, perhaps, he says, is "to cast off the dead-form of the metropolitan order."

Sticking pins in the balloon of modern pride, he says in substance:

Medieval towns were more livable than any built since.

Renaissance towns were made elegant for the gentleman. As much as one-fourth of a city's people, by estimate, were casuals or beggars.

The machine age brought industrial towns in which even upper classes lived in slum-like congestion, with houses lacking proper light and ventilation.

The metropolis offers what the sociologist calls a ghost-like existence, in which people know about many things but have vital acquaintance with so little. Passive crowds know life by reading, looking, listening. He says, "they are bordering on a pathological state."

Subways he calls traveling prisons, in which people spend vast amounts of time "upon an activity that has flatly no value in itself."

The tremendous water supplies needed by a giant city are seen as a war-time danger: "Should an enemy disorganize the water supply of the metropolis for as much as three days, the result would be a far more horrible loss of life than the worst conceivable vomit of poison gas from the skies."

The downward cycle of city evolution, if unchecked, leads toward over-expansion of industry and questionable speculations, followed by depressions. Cities are dominated by their worst traits, including graft, privilege-seeking, all forms of grab-and-get, moral apathy, fear, uncertainty, "rise of gangster-dictators (Hitler, Mussolini) with active consent of the bourgeoisie and systematic terrorism by pretorian guards." This stage ends in a deliberate cult of savagery, barbarian invasions from within and without, and beginning of exodus from the cities.

After that, the sociologist can see one worse picture: war, famine, and disease racking both city and countryside, and the cities go down in ruin like Nineveh and Babylon.

Regional planning is seen by Mr. Mumford as promising relief for metro-

politan conditions. Cities must be rebuilt from within. Man is at last in a position, he avers, to rise above machines and to create a new environment to offer a good life not to the strong and lucky alone, but to all who work together for this end.

*Science News Letter, May 21, 1938*

#### MEDICINE

## Cancer Cannot be Bred Out of the Human Race

**As An Old Age Disease, Cancer Does Not Strike Until Child-Bearing Period Is Over; May Strike Any**

**C**ANCER cannot be bred out of the human race, Dr. Madge Thurlow Macklin, of the University of Western Ontario Medical School, declared at the meeting of the American Association for Cancer Research in Atlantic City.

Dr. Macklin believes cancer is dependent on inherited factors. She cited human family records showing what she believes is evidence for the inheritance of cancer tendency. One kind of skin cancer seems to depend on a single recessive hereditary factor, for it tends to appear in one-fourth of the children although the parents are unaffected. Other kinds of cancers and tumors have other types of heredity, some of which have not yet been clearly worked out.

Even if the manner of inheritance could be learned for every kind of cancer, it would be impossible to breed it out of the human race, Dr. Macklin explained, because of the age at which cancer develops.

#### Too Late

"Since practically all children are born before their mothers are 40, and before their fathers are 50," Dr. Macklin said, "the race has been perpetuated before we know that the parents possess the cancer factor."

"Since women at least must reproduce while they are still young, before the age at which they will develop cancer, all women would have to stop having children in order to see if they themselves were cancerous until it was too late to have them. By the time they discovered they were supposedly cancer free, they would be dead, and even then had they lived a few years longer they might have developed a tumor."

Even if cancer could be bred out of the race, Dr. Macklin believes it would

be inadvisable because it afflicts so large a percentage of mankind that breeding it out would mean depriving the race of many persons who can contribute much before succumbing to cancer.

"This does not preclude our justifiable attempts to cure cancer," she added, "or to hunt for something to prevent it."

#### Tandem Chemicals for Control

Cancer may be controlled in mice, at least, by the use of two chemicals, tandem fashion so that the action of one reinforces that of the other, Dr. Leonell C. Strong of Yale University School of

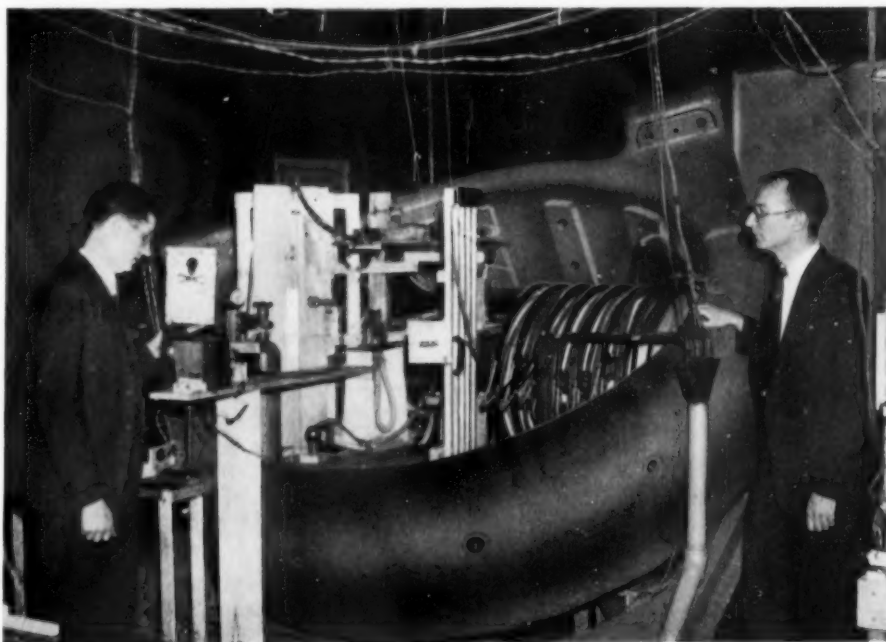
Medicine reported on the basis of his more than eight years of research in this direction. His work does not in any sense involve a "cure" for human cancer, he pointed out. It is, however, the first time that "the mechanism or mechanisms controlling the origin and survival of a spontaneous tumor have, under experimental conditions, been significantly influenced."

From oil of wintergreen Dr. Strong has obtained two chemicals which cause liquefying and disappearance of spontaneous mouse cancers with consequent survival of the mice. One of these chemicals is heptyl aldehyde. The other is methyl salicylate. Heptyl aldehyde, fed or injected into the mice, will do the trick alone, but its action is reinforced by the use of the second chemical.

Mice with spontaneous breast cancers have recovered and lived as long as 163 days after treatment with heptyl aldehyde, with an average survival time of 72 days. Untreated cancerous mice of the same strain lived on the average only 55 days.

The chemistry involved in this treatment of cancer is not yet known, but Dr. Strong believes that further research along these lines will eventually "lead to the control of spontaneous tumors of the mammary gland (and other organs), at least, in mice."

*Science News Letter, May 21, 1938*



#### RECORDS COSMIC RAYS

Dr. Edward C. Stevenson, left, and Prof. Jabez C. Street of Harvard University, Cambridge, Mass., with their automatic cosmic ray recorder. The large circular metal piece is a giant magnet between whose poles is a cloud chamber.

GENERAL SCIENCE

# Under T.V.A. Controversies Lies Much Science Research

## Great Mass of People and Wide Area Touched By Production of Cheaper Phosphate Fertilizers

**B**URIED beneath the charges and counter-charges in the current controversy over the administration of the Tennessee Valley Authority is much good science and technology which may come to light in the apparently imminent Congressional investigation.

There is the construction of giant dams designed to control floods and provide navigation on the Tennessee River and huge power plants to supply electric power to a great area. Of the economic controversy over public utilities versus private utilities much has been said. And even more will probably be said when the investigation of Congress into T. V. A. really gets under way.

But, steering clear of the economic and political aspects of T. V. A.'s current troubles, there is much science of fundamentally wide importance. In particular there is the question of phosphates and the technological advances of phosphate production, to which scientists of T. V. A. have contributed. President Roosevelt has promised Congress a special message on the importance of phosphate production.

In fact, phosphate fertilizers represent, perhaps, the nearest point at which the work of the Tennessee Valley Authority touches the greatest mass of people in the nation.

### Wider Area Affected

Flood and navigation control on the Tennessee River and the areas which can use T. V. A. power represent only a small region of the nation, compared with the wide distributional area which can be touched by T. V. A. activities in the production of phosphoric acid, phosphate fertilizers and other products requiring a compound of elemental phosphorus.

Government scientists at T. V. A. have worked toward the goal of making cheaper phosphates by improved techniques coupled with low-cost hydro-electric power. Cheaper fertilizers for the nation's agriculture is one immediate prospect of this research.

A bit farther ahead in the future may

be the day when the lessons learned at T. V. A. will enable the great western power projects at Grand Coulee and Bonneville to supply cheap electricity which can turn the phosphate rock deposits of Utah, Wyoming, Idaho and Montana into usable resources instead of prospect holes and deposits now marked only on the maps.

At present, large-scale commercial production has been attained only in Florida, Tennessee, Idaho and Montana, with some lesser output from South Carolina, Kentucky, Arkansas, and Utah.

The source of raw material for existing commercial operations is rock phosphate which, geologically, represents man's harvesting of a by-product of animal life in prehistoric ages. Rock phosphate, many geologists believe, contains phosphate released in the disintegration of the bones, tissues and excrement of prehistoric animals. Some of the profitable Florida deposits seem to be the result of the leaching of guano.

### Phosphorus Cycle

The life cycle of animals, in fact, is an interchange of the placement of phosphorus in the earth. Plants take the phosphorus from the soil, man and animals eat the plants, and each other, and store the phosphorus in their bones. At death, these bones and their contained phosphorus are returned to the soil.

Thus, in the life cycle of modern civilization, the shifting of phosphorus is through a sort of giant funnel. The phosphorus is collected from all the farms of the nation and ends up in sewerage or in the bones of man and animals. The bones of animals are partially reused to supply more phosphorus and its compounds. The phosphorus in human bones eventually comes to rest in the cemeteries of the nation.

The history of phosphate manufacture has its origin in the burning of the bones of animals. This bone ash, as it is called, is considerably purer than mineral rock phosphate, as one would expect. Such bone ash, even today, goes into the production of phosphoric acid

and the compound monocalcium phosphate for baking powder, as far as its limited supply allows.

One of the commonest ways of making phosphate fertilizers is to add somewhat dilute sulfuric acid to ground rock phosphate. One pound of the former plus a pound of the rock produces about two pounds of ordinary phosphate fertilizer carrying from 16 to 18 per cent. phosphorus pentoxide ( $P_2O_5$ ). The pentoxide is the standard way of rating fertilizers for their phosphorus content.

But phosphorus and phosphoric acid can be produced, without sulfuric acid, by heat treatment. And there is where T. V. A.'s cheap electric power comes into the picture, because except for the technical difficulties involved, it matters little what the source of heat may be. T. V. A. engineers have employed electric furnaces and, through the years, ironed out many of the difficulties of electric furnace operation in phosphate manufacture.

### The Process

Under the direction of Dr. Harry A. Curtis, chemical engineer at Muscle Shoals, T. V. A. has been making phosphates by mixing rock phosphate, coke and silica pebbles in electric furnaces. Elemental phosphorus, carbon monoxide and calcium silicate are the three products resulting.

Later the phosphorus is burned, or oxidized, and then washed with water to produce phosphoric acid. The by-product, calcium silicate, may be blown into fibers and used as rock "wool" for insulation purposes. The phosphoric acid is combined with rock phosphates to make the commercial fertilizer.

Another variation of the electric furnace method of making phosphate fertilizers starts in the same way in producing phosphorus, carbon monoxide and calcium silicate but the first two are burned together and the resulting gas combined with phosphate rock as the fertilizer. This product can be hauled in open gondola cars without deterioration. The soil solution finally makes the phosphorus of this fertilizer available to the plants.

Recent conferences have been held in Idaho to discuss the great phosphate deposits in the western states. The rock is of high quality but the expense of shipping it to distant points for conversion into fertilizers has prevented its extensive exploitation in the past.

There are two possible ways these western deposits might be made commercially profitable. Either cheap elec-



tric power in large quantities could be purchased from government-owned hydro-electric plants in western areas, or the great resources of oil shale, very near the phosphate deposits, might supply cheap fuel. This shale oil cannot be produced profitably and shipped any great distance by processes known today. But if the oil were used at the phosphate smelting plants, nearby, perhaps the project could be worked out. All this, however, is for the future. A more immediate possibility is the use of coal available within 25 miles of the phosphate field. At Anaconda natural gas is available at a very low price.

*Science News Letter, May 21, 1938*

## GEOLOGY

## Crystals in Antarctic Rocks Revise Geologic Theory

**G**RIMY, greenish-gray rocks, broken from the ice-carved, windswept slopes of an extinct volcano in the almost unexplored Raymond Fosdick Mountains of Antarctica by Dr. Thomas C. Poulter, senior scientist of the second Byrd Antarctic Expedition, may increase our knowledge of how rocks are formed.

Reporting the results of a study of these rocks to the Geological Society of America, Dr. C. N. Fenner, rock expert of the Carnegie Institution's Geophysical Laboratory, in Washington, finds that old ideas of rock formation need to be reviewed.

Until recently, it was believed that molten rocks deep under the earth's crust resembled basalt, a dark heavy rock, of which the Palisades of the Hudson, the Giant's Causeway in Ireland, and other famous clifflike structures are made. As these molten rock masses came near the surface, certain compounds in them crystallized as the rock cooled, leaving other mineral compounds molten until further cooling took place, and changing, as cooling went on, the chemical composition of the remaining molten material.

According to this theory, which has received much support, alkaline materials should crystallize first from a molten rock magma, leaving it more acid than before. The rocks from the Antarctic, however, do not follow the theoretical rules of change, suggesting to the geophysicists that laboratory conditions do not duplicate field conditions very closely, and that tests should be made of the rocks themselves and their minerals, and not of laboratory specimens under simpler conditions than those existing in nature.

*Science News Letter, May 21, 1938*



## CHILD OF TOMORROW

*Now, a reading machine joins the typewriter and adding machine as the latest addition to the gadgets of a "mechanical" education age. This ultra-modern four-year-old looks inquiringly at a page thrown on the screen of Science Service's machine for reading books recorded on microfilm. Libraries and scholars are using microfilm in increasing numbers to record on a few feet of film books and manuscript that would otherwise take up tremendous space.*

## PHYSIOLOGY

## Night Blindness May Be Cause of Auto Accidents

**U**NTOLD numbers of children in America are today eating spinach, not because their parents tell them "It's good for you," but because a popular animated cartoon character performs prodigious and fabulous feats on the motion picture screen after partaking of this green vegetable.

With the merits to children a matter for the nutrition people to decide one can go on and add, however, that it might produce a more immediate and beneficial result for the country if the parents—and not the children—ate the spinach, or plenty of green and yellow vegetables.

The reason is that these vegetables contain vitamin A. It is now found that the lack of vitamin A can be one of the causes of "night-blindness" which is recognized as a major factor in night accidents in driving.

Night-blindness is the failure of proper regeneration of the chemical known as visual purple which is found in the retinal rods of the human eye. This visual purple is rich in vitamin A.

Glaring headlights produce temporary blindness lasting a second or two in a person with normal vision. In a person with night-blindness this effect, due to glare, lasts appreciable lengths of time. And, in a motor car travelling at a high rate of speed, a night-blinded person may have travelled several hundred feet in which control of the car is more by habit than by visual knowledge of road conditions ahead. There is no known cure for night-blindness, say physicians, but a liberal supply of vitamin A may, at least, give the eye the material it needs to prevent the onset of this condition. Do I hear little Johnny saying, "Pop, you better eat your spinach?"

*Science News Letter, May 21, 1938*

## ORNITHOLOGY

**Parrots Are Southpaws, Tests at Zoo Indicate**

See Front Cover

**W**HEN Pretty Polly politely picks a proffered piece of pear (or pickle) off the tips of your fingers, chances are four to one she'll reach for it with her left foot. Parrots are predominantly southpaws—or perhaps southclaws would be the better word here.

This curious fact has been studied at the National Zoological Park by Dr. Herbert Friedmann of the U. S. National Museum, in collaboration with Malcolm Davis, keeper of the Bird House.

Dr. Friedmann and Mr. Davis used twenty birds belonging to various parrot species, testing each bird twenty times. When pieces of food were offered, they almost always reached for it with left feet. When the food was placed in the middle of the cage, so that it could be reached with either foot, again it was left feet that usually went out for it. In all the tests, the left foot was used for between 75 and 80 per cent. of the pick-ups.

Only one species, a rare parrot from the East Indies, was consistently right-footed.

Mr. Davis is now watching other birds, that do not pick up food with their feet, to see if they exhibit "footedness" in other ways. For example, do storks stand more on one foot than on the other?

*Science News Letter, May 21, 1938*

## PSYCHIATRY—PSYCHOLOGY

**Man's Aggressive "Instinct" Is Roused by Aggression**

**H**OSTILITY has a way of rousing hostility while "a soft answer turneth away wrath." This wisdom familiar to the writer of the Proverbs is given new emphasis in modern treatment of the mentally ill.

In mental hospitals are many individuals whose aggressive tendencies have brought them into trouble. In days gone by, such persons were locked up, bound, or drugged. But confinement never cured the aggressiveness.

Today the restraint of mental patients is becoming obsolete. And with force ruled out, physicians have of necessity developed intelligent ways of dealing with aggressiveness in the mentally ill.

This progressive step in psychiatry has its lessons for those who have to

do with human aggressiveness in other spheres, it was pointed out by Dr. William A. White, pioneer in modern psychiatry, in a book just now posthumously published, "The Autobiography of a Purpose," (Doubleday, Doran).

"I am satisfied that the aggressive instinct, so called, of mental patients is activated by the aggressive instincts of others," he said, "And that it is allayed when others do not have that aggressive instinct toward them.

"And I am sure that with few exceptions the aggressive instinct of the majority of criminals is similarly activated or allayed and that they could be treated with something like similar consideration, although I am well aware that there are a certain few criminals who do not seem to be reachable by any means that we now possess.

"The psychiatrist is only beginning to make his contributions to social problems but he has a great number of suggestions along lines that are not usually thought of. I have already mentioned the activation of the aggressive instinct. Nothing activates it more seriously than does war. An orgy of killing lets it loose and it is a good many years before it is ever chained up again. We are having that experience, I am afraid, now."

Important in maintaining civilization is removal of what rouses man's aggression, Dr. White concluded.

*Science News Letter, May 21, 1938*

## GENERAL SCIENCE

**New York Science Students Stage Their Annual Fair**

**T**HE TENTH Annual Junior Science Fair of the science students of New York's public schools demonstrated exhibits in all realms of science.

Sponsored by the American Institute, the four-day fair, May 8 to 11, was staged in the American Museum of Natural History. All exhibits were the actual creations of the students.

Among the exhibits were: Working models of deep mine and oil well interiors, volcano eruptions, astronomical observatories, rocket ships, arc furnaces, and flood control systems, all within the range of the children's ingenuity in the use of papier-mache and plaster paris. Actual experiments showed the learning behavior of rats in mazes, the action of a receding waterfall, color effects obtained by passing electricity through rarefied gases, scientific methods of crime detection, and the manufacture and use of spun glass.

*Science News Letter, May 21, 1938***IN SCIENCE**

## ASTRONOMY

**Pluto May Be Covered With Layer of Liquid Air**

**P**LUTO, the ninth planet of the sun's family, may be larger in size than now estimated. Sir James Jeans has suggested that this distant planet is so remote and cold that it is covered with a layer of liquid air.

Acting like a mirror, this supercold liquid air would give a minute image of the sun. This is what astronomers would see when they observe the planet. The sunlight from the outer portions of the disk would not reach the earth. The apparent brightness of Pluto would give a too conservative idea of its size.

A size for Pluto larger than that of the earth, which might be possible according to this theory, would support the idea that Pluto exercises a noticeable effect on both Neptune and Uranus. This was the basis of the late Prof. W. H. Pickering's prediction of a ninth planet made before Pluto was discovered.

Dr. A. C. D. Crommelin, in discussions before the British Astronomical Association, recently called attention to the Pickering work in America as well as the orbits by Prof. Percival Lowell who founded the American observatory where Pluto was actually found in 1930.

*Science News Letter, May 21, 1938*

## CHEMISTRY

**Waste Refinery Gases Make High Efficiency Gasoline**

**O**N AN unprecedented scale chemistry is now turning once-wasted refinery gases into superior quality gasoline, it was reported to the American Institute of Chemical Engineers.

About 3,500 barrels of the new high efficiency polymer gasoline are now being produced at only one plant from gases formerly wasted, it was reported by S. D. Turner of the Humble Oil and Refining Company.

The polymer gasolines are created by applying heat and pressure on the gases in such a way that larger, heavier molecules are formed which have use as gasoline.

*Science News Letter, May 21, 1938*



# CE FIELDS

## ENTOMOLOGY

### Sixty Miles An Hour Greatest Speed of Insects

A MILE a minute is the fastest an insect has ever been observed to fly over a measured course. This was done by an Australian dragonfly, whose speed over a distance of between 80 and 90 yards was clocked at three seconds, by the well-known New Zealand entomologist, Dr. R. J. Tillyard. Other scientists, using various methods, have determined the speeds of flying insects belonging to various orders at from 18 to 33 miles an hour.

A review of these authentically measured insect speeds is given in *Science* (May 6) by Dr. H. E. Ewing, U. S. National Museum entomologist, in commenting on the claimed speed of over 800 miles an hour by a Mexican deer botfly, which was recently exploded in the same journal by an engineer, Dr. Irving Langmuir, of the General Electric Company's research laboratories.

*Science News Letter, May 21, 1938*

## PHYSICS

### Polarized Light Bringing New Industrial Revolution

A NEW industrial revolution is in the making and it will be created out of light. Practical applications on a large scale are foreseen now that man can create and control the kind of light that vibrates in one plane only. This kind of light is called "polarized light."

What the vacuum tube, familiar in our radios, did for applied electricity, a cheap and convenient means of polarizing light promises to do for optics.

For many years the polarization of light has been understood and used in a limited way. Expensive Nicol prisms, made from suitable crystals of Iceland spar, have long been used in microscopes and other optical instruments. The effects of polarized light have long been demonstrated in classroom physics experiments.

It is startling to have light blotted out by a mere twist of a disc that had been perfectly transparent. This happens when the prisms are "crossed" or ar-

ranged so that their "one-way streets for polarized light" block each other.

The new development in polarized light is the commercial production of large sheets of polarizing material, called Polaroid. Millions of small, needle-shaped crystals of the chemical, sulphate of iodo-quinine, are laid down in a film, which may be a yard or more wide and continuous in length. This synthetic sheet polarizes perfectly.

Some of the practical applications are:

A desk lamp that eliminates glare from papers on the desk.

Sunglasses that rub out sunlight reflections on pavements, sea, ice and snow.

Elimination of auto headlight glare by use of 45 degree polarizing screens on headlights and windshields of all cars.

Photographic filters for surface reflection elimination.

Colored illumination and advertising displays.

And the most promising of all, perhaps, stereoscopic or three-dimensional motion pictures in color.

*Science News Letter, May 21, 1938*

## ASTRONOMY

### Gale's Comet, Missing Since 1927, Rediscovered

G ALE's comet, missing from the region of the sun and earth for eleven years, has just been rediscovered by astronomer L. E. Cunningham of Harvard College Observatory. This comet, too faint to be seen with the unaided eye, was first found on June 7, 1927, by Walter F. Gale, a justice of the peace in Sydney, Australia, who observes stars in his spare time. The probable return of Gale's comet this spring was forecast last January by Science Service (SNL, Jan. 1).

As seen from the United States the Gale comet is low in the southeast sky about 10 degrees above the horizon. It is near the constellation of Ophiuchus, the serpent bearer. A neighboring constellation, perhaps more easily located, is Scorpius containing the brilliant star Antares.

As now reported the comet is a diffuse object, without tail, of the tenth magnitude. It was first sighted at Harvard on the night of May 1. Its position was then: right ascension, 17 hours, 23 minutes, 22 seconds; and its declination, minus 13 degrees, 4 minutes. While low in the sky in northern latitudes it is high overhead in Australia, where astronomers will have a good chance to observe it.

*Science News Letter, May 21, 1938*

## ASTRONOMY

### Planet Beyond Pluto Not Found after Extensive Search

"NEW Planet Discovered!" "Discoverer of Pluto Finds Sun's Tenth Planet!"

These are the headlines that might have been, but probably never will be. Ever since that day in February, 1930, when Pluto was picked up by young Clyde Tombaugh, boy astronomer not long off the farm, there has been hope of finding another, a tenth planet, even farther from the sun. As a consequence at Lowell Observatory, Flagstaff, Ariz., the world's most extensive "missing planet" search has been in progress.

Some 70,000,000 star images on exceptionally high quality photographs, sweeping the heavens in a broad band, have been studied and patiently compared in hope of spotting the hypothetical heavenly body. The work has been done largely by Tombaugh, Pluto's discoverer, working under the Brothers Slipher, V. M. and Earl C., and C. O. Lampland, who follow in the planet sky tracks of Percival Lowell, protagonist of canals on Mars and founder of the observatory.

Several times in the search there was high excitement when what seemed to be a second trans-Neptunian planet was found. But always these proved to be spurious specks on the photographic plates.

Why should astronomers hope for still another planet? Pluto was found after years of hopeful searching of Lowell's prediction. Pluto is relatively small and a still fainter planet should be findable. Jupiter's satellite system is, by the addition of Pluto, now paralleled by the sun's family of planets, and the existence of the tiny outer bodies of Jupiter bolstered the hope that beyond Pluto the sun's system might well have other small planets.

By-products of the search: Charting of 3,000 minor planets or asteroids, many of them new, exploration of the great Perseus-Andromeda stratum of nebulae, charting of distribution of thousands of nebulae over the sky, and the finding of variable stars, and an occasional comet. And finally there remains a large library of excellent plates of the sky which afford an excellent record for future reference in other searches of the heavens.

*Science News Letter, May 21, 1938*

## PSYCHIATRY

# The Shock That Cures

## Insulin Treatment Provides First Ray of Hope for "Living Dead" Suffering from Dementia Praecox

By JANE STAFFORD

**S**HOCKING people out of insanity is just as spectacular as it sounds. I watched the procedure as it is carried on at the Harlem Valley State Hospital at Wingdale, N. Y. No novelist, using the device of a severe mental shock to restore the sanity of a character in fiction, ever imagined anything more dramatic or more frightening to watch than this scientific procedure which, although no cure-all, has already rescued hundreds of real persons from the living death of dementia praecox.

In the special wards reserved at the hospital at Wingdale for the newly-discovered insulin shock treatment I saw some 15 patients stretched in death-like coma on their beds. At 7 o'clock that morning each of them had received a huge dose, by hypodermic injection, of insulin, potent diabetes remedy. For nearly five hours after that they lay unconscious, oblivious alike to their actual surroundings and, presumably, to the unreal world of their disordered minds.

Only a short step separated them from death. Doctors went from patient to patient, lifting an eyelid to note how far the pupil had contracted and thus to gauge the depth of the coma. Nurses felt at temples for the faint pulsing of blood through the veins. Attendants shifted a pillow to keep a head from dropping too far back.

### Danger

A sharp-eyed nurse saw the disturbed breathing of one patient that meant danger. Desperately she tugged at the heavy body, rigid in its strange unconsciousness. Without a word spoken, an attendant noticed and came swiftly to her aid. He loosened restraint sheets and helped her throw the patient over. No time for gentleness. Time only to throw him face down and pound his back, so the accumulated mucus would drain out of this throat and not choke him. In the far corner, a doctor worked over another patient in similar state. A tube was inserted in this one's nostril to help drainage and free the air passages.

At noon I saw the patients awakened.

The sweet, life-saving insulin-counteracting solution of sugar and water was poured into the stomach through a rubber tube inserted in a nostril. The waking process was horrible to watch. It showed, if nothing else had, how severe the shock had been, how far gone the patients' consciousness. The patients retched and choked. They uttered terrifying, animal-like sounds. Some vomited the vital sugar. In such cases a doctor and nurse came swiftly with syringe and hypodermic needle. Lightning-fast the tourniquet was tied around the arm, the needle plunged into the vein and more sugar solution injected. Delay of even a minute might mean death.

### Tension

The room grew hot. There was no time to wipe up vomitus, or to change soiled bedding. Attendants moved swiftly, tightening restraint sheets to keep the awakening patients from throwing themselves out of bed as they thrashed about. Arms, rigid as boards, were thrust into

the air, fingers spread stiffly apart. Inhuman grimaces distorted the unconscious faces. And always, the three doctors, six nurses and four attendants watched and worked in swift, silent precision.

Once, when all were quiet momentarily and the tension slackened, I heard a visiting physician say to one of the staff:

### Relief

"You must breathe a sigh of relief each day when they have all come safely out of it."

The answer was only a nod and an eloquent look that said "Yes" more fervently than words.

The treatment is given five days a week, Monday through Friday, with Saturday and Sunday for rest. This continues for weeks, until the patient has completely recovered or the physicians think he cannot be helped by further treatment.

The patients themselves have no memory of the horror or the drama of the treatment. The drama comes from the fact that if the counteracting sugar reaches their blood a minute too late,



### AS THOUGH DEAD

*This man's face is carefully covered, for tomorrow he may be recovered and discharged from the mental hospital. His identity is therefore protected. This patient is completely unconscious under the effects of the insulin.*



### THE TOOLS

*Here is spread out the complicated array of tools necessary for administration of the insulin shock treatment for the mental disease schizophrenia, also known as dementia precox.*

they will die. The horror comes from their struggle back from their deeply unconscious state and also from the fact that no matter how improved they may be by the treatment, they usually return for a short time, while they are awakening, to their former mentally disordered state.

Many of them return to new life, unclouded by the experience they have been through or by the shadows of mental disease. I saw them finally reach full consciousness, sit up and drink another cup of sugar and water. I saw them, after a short rest, get up, stretch themselves like any normal sleeper, walk into the next room and hungrily fall to on the piled-up dinner trays that awaited them.

### Talked With Patients

That evening I talked to some of these patients. One of them seems on the way to what the physicians at the institution term "recovery." He no longer sees faces in the sky and no longer thinks that he is being persecuted. Better than that, he realizes that his hallucinations were mere delusions, the product of a disordered mind.

"I just imagined that people were after me," he told me. "I had been working nights, losing sleep and not getting enough to eat. I was all worn out and that made me imagine those things."

Not fully recovered, but "much im-

proved" was another patient. He, too, had seen faces and he believed birds and animals talked to him. He is no longer bothered by these delusions.

"I don't hear them any more, but they really did talk to me," he insisted.

The scene that I witnessed at Harlem Valley Hospital is being repeated daily in many public and private hospitals through the United States and foreign countries. Patiently, heroically, physicians and nurses and attendants are performing over and over again the deft, life-saving ministrations I watched.

### From Vienna

The insulin shock treatment for dementia precox was originated by Dr. Manfred Sakel at the Neurological and Psychological Clinic of the University of Vienna. It was at this famous medical center that Prof. Julius Wagner-Jauregg originated the malaria treatment for another mental disease, paresis, for which he was awarded the Nobel Prize. Dr. Sakel seems also to have in him the stuff of which Nobelists are made. Not that he bears any resemblance to the traditional bearded, absent-minded scientist. He does not even wear spectacles over his keen dark eyes. Young, good-looking, modest almost to the point of shyness, faultlessly tailored, you would expect to see him behind the desk of a business executive's office or at a social function, rather than in a scientific

laboratory or making rounds in the wards of a mental hospital.

His discovery of the value of insulin shock for treating mental disease was made as a result of his studies of drug addiction. Large doses of insulin, he found, alleviated the withdrawal symptoms which are the feature most dreaded by morphine addicts undergoing treatment. At first he used doses of insulin just large enough to pacify the patients who grew excited after the withdrawal of morphine, or to make them sleepy. In many cases, the period of treatment was considerably shortened by this insulin treatment.

### Symptoms Similar

The excited state of morphine addicts suffering withdrawal symptoms is so much like the types of excitement seen in some dementia precox patients that it occurred to Dr. Sakel that it might be possible to influence this latter type of excitement by insulin. Accordingly, he started giving insulin to dementia precox patients, only for them he used much larger doses than he had on the morphine addicts.

His spectacularly successful results attracted wide attention from fellow scientists. But because the treatment is so dangerous, they hesitated for months, years even, before they dared to try the new method. Dr. Sakel himself has always pointed out the danger of the treatment and urged extreme caution. The treatment can only be safely carried out in a well-equipped institution with a large, specially trained staff of doctors and nurses. To attempt it in the patient's home or the doctor's office would, quite literally, be fatal.

Patients suffering with dementia precox, however, have heretofore always been considered as good as lost—doomed to a lifetime of the living death of insanity. Dangerous as the insulin shock treatment is, it seems worth trying in these hopeless cases, and one by one, physicians on

### PATON RANCH

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### EXPERTS

*Dr. Nolan D. C. Lewis, director of the New York State Psychiatric Institute, (left), Dr. Manfred Sakel, of the University of Vienna, and Dr. John R. Ross, superintendent of the Harlem Valley Hospital (right). They are conferring on the insulin treatment.*

the staff of mental hospitals have dared to try it.

The Harlem Valley State Hospital was one of the first in the United States to institute it, and it was begun there under the direct supervision of Dr. Sakel himself. He was invited by Dr. John R. Ross, the superintendent, to give a course of training in the new treatment to the staff of that hospital and to a group of physicians from other state hospitals in New York.

"Dr. Sakel first came to this country on the invitation of the head of a private hospital," Dr. Ross told me. "But I felt this treatment should be available to the masses as well as the classes, so I went at once to see him and asked him to give this training course."

At the Harlem Valley institution, the results of treatment are summed up according to four grades. Some of the patients—6 out of 52 treated so far—

have completely recovered, like the man who told me he only "imagined people were after him." Another 15 are in the class "much improved," no longer bothered by their delusions, but not realizing that they were only delusions. These patients are now at home living normal lives. Of the others, 22 are "improved" while 9 are "unimproved." There have been no deaths. When he told me that, one of the doctors literally crossed his fingers.

The results of the insulin shock treatment appear even more striking when the figures are looked at in another way. Harlem Valley State Hospital, like other state institutions, does not get patients until they have been sick for some time and the mental disease has become chronic with them. Dr. Sakel himself did not expect to get good results when he came to Harlem Valley.

Of the first 52 cases treated since December, 1936, 8 patients had been sick from 1 to 2 years. Of these, 3 recovered, 3 were much improved and 2 remained unimproved. Thirty-two of the patients had been victims of mental disease for from 2 to 6 years. Of this group of chronically sick, 3 recovered, 10 were much improved and able to go home, 15 were improved and only 4 were unimproved. Another group of 12 cases had been sick for over 6 years, one of them as long as 17 years. None of these recovered, but 2 were much improved and able to go home; 7 were improved and

only 3 of this apparently hopeless group were unimproved.

Similar results have been reported by physicians using the treatment at other institutions. Encouraging also were the reports of patients who continued to show improvement after the treatment stopped and they had been sent home. The patients themselves in some instances and often some of the relatives reported that, although they had seemed in fine shape when first they went home, they were even better several months later. Even some of the patients who showed no signs of improvement after weeks of treatment, so that finally it was stopped as a useless procedure in their cases, began to improve some weeks or months later.

On the other side is a darker picture. The treatment does not help all cases, is of greatest help in early stages of the mental disease, and can in no sense be considered a cure-all. Some relapsed after being much improved and had to be brought back to the hospital. Some of these improved again after further treatment, others did not. The relapse in some cases may have been due to the fact that the patients returned to the unfavorable home environment and difficult family situations which had contributed to their mental breakdown in the first place.

This brings up the question of whether the shock treatment is really a cure. Dementia precox, or schizophrenia as it is also called, has hitherto been a hopeless mental ailment. Always there have been some patients who appeared to recover without any treatment, a few permanently, but most of them only to relapse still further into mental disorder. Whether the insulin-treated patients will stay well is a question that cannot be answered yet. Not enough time has elapsed to show whether the improvement is any more lasting than that which has occurred in some cases that had no treatment. One authority believes that the constitutional tendency to the disease

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will always remain and that even those patients who recover after insulin treatment may relapse if subjected to severe or protracted mental strain.

The more hopeful view is that even if the first insulin-treated cases relapse, the treatment will succeed in the end. Questions of dosage and of how long to continue the treatment have not been established. Dr. Sakel is frequently questioned on this very point of how much insulin to give and how many times to repeat the shock. His answers to physicians are always that each case has to be considered by itself and the treatment adapted to the condition and reaction of the patient. Some patients need a large enough dose of insulin to produce convulsions. Others improve without convulsions but after the shock of coma.

The victims of this most common and most tragic of all mental ills number over 150,000 in the United States alone. They fill one-fifth of all the hospital beds in the country. Most of the victims are stricken just as they are attaining maturity, at the very outset of their economic independence. The cost of their support and care, at home or in institutions, plus the loss of their removal from productive pursuits, is at least \$1,000,000 a day. Some authorities put the figure at \$2,000,000 daily.

Added to this is the incalculable cost of the disease in terms of human suffering. The share of this that must be borne by the patients, shut away from the world of the sane by the thick clouds of mental disorder, cannot even be imagined. Easy to imagine but hard to evaluate is the cost in grief to the families who must stand helplessly by, unable to aid and, in many cases, unable even to make themselves recognized or to bring that cheer and sympathy which helps assuage the suffering of patients hopelessly ill with bodily disease.

For all these, insulin shock treatment brings hope for freedom from economic burden, from shame or old-fashioned stigma, from grief and suffering, best of all from insanity itself.

*Science News Letter, May 21, 1938*

#### PSYCHIATRY

### Shocks of Many Kinds Are Useful Against Mental Ills

**S**HOCK appears to be a cure for dementia precox in some cases regardless of the agent producing the disturbance to the nervous system.

Insulin is one agent being used successfully to literally shock patients out of their mental disease.

Other compounds are being used to create shock for the dementia precox patient. One of the first tried was camphor. A dose of the drug will produce in the patient convulsions like epileptic seizures, and with recovery from these fits comes recovery from the mental disease also.

Metrazol is now replacing camphor, because it acts more immediately. Like camphor, it is being used reluctantly for the reason that physicians know so little about possible complications in the use of this drug.

The satisfactory part of the insulin therapy is that it is so easily and instantly controlled. Physicians can let the shock proceed as far as seems necessary or desirable and then instantly stop it with the administration of a little sugar.

When the convulsion-producing drugs are used, patients may sometimes go into a state of having one seizure after another, in which case, the physician can only stand helplessly looking on. This occurs only very rarely, however, and ordinarily the force of the drug is spent within a single minute.

This short duration of treatment as compared with the hours required for the insulin administration, is an important advantage of the metrazol type of shock.

Serious complications, including dislocations and bone fractures due to the violence of the convulsion, and also lung abscess have been warned against.

Among the patients treated with metrazol at Brooklyn State Hospital who had been ill less than six months, 91.3 per cent showed definite improvement. More than two-thirds (69.5 per cent) were released from the hospital. Of the group who had been ill between seven months and two years, 41.3 per cent showed improvement and 29 per cent were paroled. Of those ill more than 2 years, 34.9 per cent showed improvement and only 11.3 per cent were paroled.

The insulin and metrazol produced shocks are not the first known to have cured the mentally ill. Dr. N. D. C. Lewis, director of the New York Psychiatric Institute, has reported several surprising cases that were suddenly

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## THE AUTOBIOGRAPHY OF GENERAL ISAAC J. WISTAR (1827-1905)

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Almost hermetically sealed for 32 years after his death, the autobiography of General Isaac J. Wistar, colorful character of a colorful period, gives the American reading public a fresh, first-hand account of the nation's roisterous makers, from the Forty-Niners to the early industrialists.

Written from his diary and contemporary notes, Wistar's opus was intended only for close kinsmen's consumption. It tells with especial frankness of the gunfights and slayings, raw deals and chicanery of the opening of the Far West. In these Wistar, though of heroic stature, is not a hero to be emulated by good little boys. His will, upon his death in 1905, prohibited publication of the autobiography for at least 5 years. In 1914, The Wistar Institute of Anatomy and Biology, which he endowed, cautiously printed 250 copies with a foreword which bound their select readers to confidence.

This new limited edition is published, turning new light on historical controversies of the Civil War period and giving naturalists one of the few eye-witness accounts of the virgin wonderland of the Northwest by a nature lover who literally blazed its trails.

#### Recent Reviews

"This autobiography reveals one of the most colorful characters and careers in American history."

Westchester Feature Service.

"Valuable adjunct to historical records."

Boston Sunday Post.

"A strange adventure tale interlarded with the vigorous opinions of a man who knew his own mind better than most, it relates many striking incidents."

Time.

"Easy, smooth, readable literary style."

Florida Times Union.

"Unusually colorful and frank."

The Enquirer, Cincinnati.

"The book is a fortunate combination of historical material with vivid narrative and unquenchable personality, at all times vigorous, shrewd and veracious record."

Cornelia Meigs.

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startled or physically shaken out of their mental fog by a severe shock.

One case occurred during the time when Dr. Lewis was experimenting with snake venom as a death-producing agent in animals. He had a collection of extremely venomous snakes and kept them in secure cages with a special device for putting in food out of reach of their deadly fangs.

The snakes liked sun. One day while they were sunning outdoors outside the laboratory, a patient, perhaps bent upon suicide or with some irrational purpose in mind, broke out of the line of those taking exercise. He rushed to the cage of snakes, tore the top off, and thrust his arm in among the serpents. He was badly bitten.

Within fifteen minutes Dr. Lewis was working over him with shock combatting drugs. But already the patient was mottled from the poison, his eyes were rolled back in his head. He seemed close to death.

He lived.

And when he recovered, his mental disease was gone.

Another such recovery was due to the action of another patient. The man was weaving when the other patient crept up behind him and hit him a terrific blow over the head with an ax handle.

For days the victim of the attack lay unconscious. X-rays showed that no fracture had occurred; he had merely suffered from a terrible shaking up of his brain. When at last he woke from his unconsciousness, he was restored. The mental disease had gone.

On a problem so complicated as that of dementia precox, scientists cannot afford to overlook a single avenue of approach. Laboratories are busy constantly seeking new methods of treatment.

*Science News Letter, May 21, 1938*



Poison Ivy Poultices

**P**OISON ivy would hardly appeal to most of us as suitable material for medicine, either external or internal. Yet we learn, on the authority of Dr. Huron Smith, a careful ethnologist, that the medicine men of at least two prairie tribes, the Meskwaki and Potawatomi, made poultices out of pounded poison-ivy roots for the opening of some kinds of swellings. The art is largely lost now.

Only the most skillful of the medicine men were supposed to know how to prepare this rather drastic remedy—and no wonder! Their patients must have been *very* tough Indians.

The "roots" mentioned by Dr. Smith were presumably really the underground stems or rhizomes of the poison ivy, for the true roots of the plant are small and fibrous affairs, difficult to gather and containing little sap. But the rootstocks are thick and juicy, and the sap is as virulent as that of any other parts of the plant. Perhaps it worked on the principle of the old-fashioned mustard plaster, or the still older cantharides blister, used in paleface medicine—as a drastic counter-irritant.

Indians of many tribes recognized poison ivy as a bad weed to fool with, just as white men do. The stories that all Indians were immune is pure fable. Some of them were, just as some fortunate white persons are. But in general, red skins were as likely as white to blister and itch after contact with the three-leaved menace. Indians had many folk remedies for ivy poisoning, most of them useless, just like most of the poison ivy "cures" we ourselves desperately use.

Ivy poisoning yields, in almost all cases, to one basic scientific principle—oxidation. Use a good, active oxidizing agent and you get relief and remove the cause. One recommended nowadays is a five per cent. solution of potassium permanganate in water, or water-and-alcohol. This leaves a brown stain, which can be removed with lemon juice.

The permanganate treatment must be used with discretion, lest it irritate the skin itself. But most of us, tormented with unbearable itching and burning, are willing to take a chance.

Best thing of all to do, of course, is to learn what poison ivy looks like and keep away from the infernal stuff. Recognition, of course, is easy; avoidance may not be quite so simple. But with reasonable caution, the dreaded contact may nevertheless be shunned.

*Science News Letter, May 21, 1938*

## ● The Trembling Earth

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following epicenters:

*Wednesday, May 11, 9:44.6 a. m., E.S.T.*

In the Pacific Ocean off the coast of the Mexican state of Guerrero. Latitude 14 degrees north, longitude, 101 degrees west.

*Thursday, May 12, 10:39 a. m., E.S.T.*

Severe, with waves of "enormous amplitudes, at the eastern edge of the East Indian island of New Guinea (approximate).

Stations cooperating with Science Service in reporting earthquakes recorded on their seismographs are:

U. S. Coast and Geodetic Survey Stations at Tucson, Ariz.; Ukiah, Calif.; Honolulu, T. H.; Sitka, Alaska; San Juan, P. R.; University of California; Carnegie Institution of Washington, Pasadena, Calif.; Georgetown University; U. S. Weather Bureau, Chicago, Ill.; Seismograph Station, 1224 44th St., Des Moines, Iowa; Massachusetts Institute of Technology; Oak Ridge Observatory, Harvard, Mass.; Weston College; Williams College; University of Michigan; St. Louis University; Apia Observatory, Apia, Samoa; Manila Observatory, Manila, P. I.; Montana State College; Montana School of Mines; Canisius College; Fordham University; St. Xavier College, Cincinnati, Ohio; The Franklin Institute, Philadelphia, Pa.; Pennsylvania State College; University of South Carolina; University of Vermont; University of Wisconsin; Dominion Observatory, Ottawa, Canada; Meteorological Observatory, Victoria, B. C., Canada; Phu Lien Observatory, China; Zikawei Observatory, China (Shanghai); Magnetic Observatory, Huancayo, Peru.

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# •First Glances at New Books

Additional Reviews

On Page 340

## Psychiatry—Biography

**WILLIAM ALANSON WHITE, THE AUTOBIOGRAPHY OF A PURPOSE**—William A. White—*Doubleday, Doran*, 293 p., \$3. Rare is the specialist who has such a breadth of social interests and outlook as did Dr. William A. White, for many years superintendent of St. Elizabeth's Hospital for the mentally ill. The well-told story of the development of these interests will therefore appeal to a far wider audience than just his colleagues. See also page 332.

*Science News Letter, May 21, 1938*

## Photography

**TRICK PHOTOGRAPHY**—Edwin T. Hamilton—*Dodd, Mead*, 138 p., \$2.50. A how-to-do-it book of amusing tricks that a camera can be made to perform. It is written simply enough to appeal to boy and girl readers.

*Science News Letter, May 21, 1938*

## Geography

**EARTH SCIENCE, A PHYSIOGRAPHY**—Gustav L. Fletcher—*Heath*, 568 p., \$2.20. A definitely superior introductory textbook on earth sciences. Well-chosen diagrams and photographs add to the value of a carefully-written text.

*Science News Letter, May 21, 1938*

## Psychology

**PERSONALITY IN FORMATION AND ACTION**—William Healy—*Norton*, 204 p., \$2. Dr. Healy as director of the Judge Baker Guidance Center, has had to deal with many practical problems concerning personality formation and deformation. This volume contains a sort of birds-eye view of his experiences presented in the Salmon Memorial Lectures.

*Science News Letter, May 21, 1938*

## Sociology

**FROM FIFTH AVENUE TO FARM: A BIOLOGICAL APPROACH TO THE PROBLEM OF THE SURVIVAL OF OUR CIVILIZATION**—Frank Fritts and Ralph W. Gwinn—*Harper*, 228 p., \$3. The back-to-the-farm movement in modern guise: a strong plea for agriculture as a way of life conducive to character building, comfort, and fundamental happiness. The book closes on an optimistic note.

*Science News Letter, May 21, 1938*

## Agriculture

**FINANCING AGRICULTURE**—L. J. Norton—*Interstate*, 319 p., \$2.75. A leading student of agricultural economics here offers a closely-thought treatise that will serve excellently as a textbook for university classes, and will be equally at

home and useful on the reference shelves of bankers and insurance company officers.

*Science News Letter, May 21, 1938*

## History

**SHIPS AND SAILORS, THE STORY OF OUR MERCHANT MARINE**—William H. Clark—*Page*, 322 p., illus., \$3.50. From the little ships of earliest Colonial days, through the magnificence of the China clipper era, down to steam and diesel, this condensed history carries us. The author ends on a note of propaganda for the re-development of an American merchant marine.

*Science News Letter, May 21, 1938*

## Exploration

**FIFTY SOUTH TO FIFTY SOUTH: THE STORY OF A VOYAGE WEST AROUND CAPE HORN IN THE SCHOONER "WANDER BIRD"**—Warwick M. Tompkins—*Norton*, 268 p., illus., \$3. The story of a voyage around the bottom of the world in a small schooner, excitingly told and with good pictures. An appendix and a glossary, comprising nearly a fourth of the bulk of the book, stow a remarkably full cargo of facts about fore-and-aft rigged craft and their management; these features will be worth the price to anyone interested in sailing.

*Science News Letter, May 21, 1938*

## Biography

**UNCLE DAN, The Life Story of Dan Beard**—Cyril Clemens and Carroll Sibley—*Crowell*, 325 p., \$2. Biography of the Grand Old Man of American scouting, written and illustrated in a style which "Uncle Dan's" innumerable nephews will appreciate.

*Science News Letter, May 21, 1938*

## Entomology

**LITTLE LIVES**—Julie Closson Kenly—*Appleton-Century*, 270 p., \$2.50. Accounts of the life histories of a number of insect species related in vigorous, dramatic language that smacks more than a little of Fabre. Illustrations are made to match: somewhat impressionistic, but essentially accurate in main outlines.

*Science News Letter, May 21, 1938*

## Aviation

**AIRPLANE SERVICING MANUAL**—Victor W. Pagé—*Norman W. Henley*, 1000 p., illus., \$6. A manual for anyone having anything to do with airplane maintenance; it covers maintenance, rigging, trouble shooting, inspection, repair and aircraft radio.

*Science News Letter, May 21, 1938*

## Archaeology

**THE HAVERFORD SYMPOSIUM ON ARCHAEOLOGY AND THE BIBLE**—Elihu Grant, ed.—*American Schools of Oriental Research*, 245 p., \$2. Taking broad sections of this big problem, archaeology and the Bible, nine specialists sum up the present status of research. One discusses Old Testament studies, another the history of writing in the Near East, another Egyptian studies, and so on. For any one seriously studying in this field, such a volume is extremely useful.

*Science News Letter, May 21, 1938*

## Climatology—Sociology

**THE ABBÉ DU BOS—HIS ADVOCACY OF THE THEORY OF CLIMATE**—Armin Haiman Koller—*Garrard Press*, 128 p., \$1.75. In these days, when theories of the effects of climate on the development of human life—both individual and social—are again in the ascendant, it is of great interest to have this scholarly critique of one of the earliest of modern speculators in this field.

*Science News Letter, May 21, 1938*

## Horticulture

**GARDENS AND GARDENING, 1938**—F. A. Mercer, ed.—*Studio Publications*, 132 p., illus., \$3.50 paper, \$4.50 cloth. This book tells how to plan and lay out gardens of all styles and sizes, what to plant in them, and how to take care of them. The subject naturally calls for many illustrations, and these are richly supplied.

*Science News Letter, May 21, 1938*

## Ethnology

**THE CULTURE OF CITIES**—Lewis Mumford—*Harcourt*, 586 p., illus., \$5. See page 328.

*Science News Letter, May 21, 1938*

## Psychology

**GENERAL PSYCHOLOGY FROM THE PERSONALISTIC STANDPOINT**—William Stern; Howard Davis Spoerl, tr.—*Macmillan*, 589 p., \$4.50. Here is a translation of a German work on general psychology. Both writer and translator are associated with Duke University.

*Science News Letter, May 21, 1938*

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# •First Glances at New Books

Additional Reviews

On Page 339

## Horticulture

THE STORY OF GARDENING (2d printing)—Richardson Wright—*Garden City*, 475 p., \$1.79. It is really astonishing that so much book—of such excellent quality, too—can be sold for so little money. The author takes us back as near to the Garden of Eden as authentic history will carry, and unrolls before us the long history of the art, through Asian, Egyptian, Roman, Medieval and early modern times, to the threshold of our own day. Everybody who has a garden, or even the nostalgic yearning for one, will want to read this book.

*Science News Letter, May 21, 1938*

## Bibliography

A SELECTED BIBLIOGRAPHY ON MANAGEMENT OF WESTERN RANGES, LIVESTOCK, AND WILDLIFE—F. G. Renner, Edward C. Crafts, Theo C. Hartman and Lincoln Ellison—*Govt. Print. Off.*, 468 p., 45 c. The thousands of articles and books here cited are grouped into classes, such as Range Plants, Ecology, Economic Value, etc.—a feature that will undoubtedly prove highly useful to the users of this bibliography.

*Science News Letter, May 21, 1938*

## Photography

LEICA MANUAL (3rd ed.)—Willard D. Morgan and Henry M. Lester—*Morgan and Lester*, 586 p., \$4. This new edition holds a wealth of material for camera fans and is not limited in interest to the owners of miniatures. Many contributors offer chapters on special fields of photography and technical processes.

*Science News Letter, May 21, 1938*

## Archaeology

ARCHAEOLOGY OF THE OLD TESTAMENT—Edouard Naville—*Samuel R. Leiland*, 212 p., \$1.75. This is really the archaeology of Old Testament language, since the author summons archaeological evidence to show that "the books of the Old Testament, as we know them, in their present Hebrew form, are not in the original language written by their authors." The language problem leads into very interesting discussions of Bible events and customs.

*Science News Letter, May 21, 1938*

## Crafts

COMPLETE BOOK OF MODERN CRAFTS—H. Atwood Reynolds—*Greenberg*, 305 p., \$2.50. This book is complete in that it gives some information regarding over 40 crafts, from mask-making to book-binding. On many topics, the directions

are good enough for the reader to start right to work. China painting, on the other hand, is covered in less than two pages, on the ground that it is just that simple.

*Science News Letter, May 21, 1938*

## Anthropology—Psychology

THE MIND OF PRIMITIVE MAN (Rev. ed.)—Franz Boas—*Macmillan*, 285 p., \$2.75. Emphasized by an accumulation of scientific evidence, Prof. Boas' conclusions declare more strongly than ever: "There is no fundamental difference in the ways of thinking of primitive and civilized man." This new edition contains much recent information on the influence of environment on body and mind and also on primitive psychology.

*Science News Letter, May 21, 1938*

## Anthropology

SEQUOYAH—Grant Foreman—*Univ. of Oklahoma Press.*, 90 p., \$1.50. A well-written story of the life of this remarkable Indian, who had enough genius to give the Cherokee people an alphabet.

*Science News Letter, May 21, 1938*

## General Science

EXPLORATIONS AND FIELD-WORK OF THE SMITHSONIAN INSTITUTION IN 1937—*Smithsonian Institution*, 122 p., Free upon direct application to Smithsonian Institution, Washington, D. C.

*Science News Letter, May 21, 1938*

## Physics

LIGHT—Vivian T. Saunders—*Chemical Pub. Co. of N. Y.*, 328 p., \$2. A comprehensive text planned for use in the pre-college schools of England.

*Science News Letter, May 21, 1938*

## Aviation

FIGHTING PLANES OF THE WORLD—E. C. Talbot-Booth, ed; Eric Sargent, comp.—*Appleton*, 608 p., illus., \$3. Similar in format to "Aircraft and the Air," published by the same firm and also edited by Eric Sargent, this is a review of the world's fighting aircraft through British eyes. Several omissions, due no doubt to official secrecy policies, are noticeable.

*Science News Letter, May 21, 1938*

## Education

HOME ROOM PROBLEMS: A Practical Teaching Manual for Classroom and Training School—Laurence B. Brink—*School and College Service*, 158 p., 80 c. Intended for teachers in the junior high school.

*Science News Letter, May 21, 1938*

## Physics

PHOTOELEMENTS AND THEIR APPLICATION—Bruno Lange; Ancel St. John, tr.—*Reinhold*, 297 p., illus., \$5.50. Dr. Lange is widely known among scientists as one of the foremost investigators of photoelectric cells. This very comprehensive book will be of great interest and value to all technical workers in this field.

*Science News Letter, May 21, 1938*

## Anthropology

GREAT INDIAN CHIEFS—Albert Britt—*Whittlesey House*, 280 p., \$2.50. Here are the life stories of those famous leaders Tecumseh, Pontiac, Sitting Bull, and a few others, told with a sensitive understanding of their weaknesses and their good points. "Evidently," writes Mr. Britt, "Indians are not all quite alike, and these men had some touch of the power which rallies other men around those who possess it."

*Science News Letter, May 21, 1938*

## General Science

IN SEARCH OF SCIENCE—Herbert McKay—*Oxford Univ.*, Book 1, Air, Wind and Rain, 48 p.; Book 2, Looking-Glasses and Candles, 56 p.; Book 3, Noises. The Sun and the Moon, 62 p., 80 c. Fortunate are those who, with the aid of a sympathetic and understanding teacher, have their early introduction to science through these little booklets.

*Science News Letter, May 21, 1938*

## Aeronautics

METAL AIRPLANE STRUCTURES—Flavius E. Loudy—*Norman W. Henley*, 455 p., \$5. A practical treatise on the design and construction of the major component parts of metal airplanes. Presents a digest of the types and designs of many designers. Chapters covering welded and riveted joints, stressed skin construction, metal wings and beams, fuselage, hull and float design are included. Illustrated.

*Science News Letter, May 21, 1938*

## Zoology

THE COMPLETE FOX TERRIER, WIRE-HAIRED AND SMOOTH COATED—Irving C. Ackerman—*Orange Judd*, 312 p., \$2.50. If you like lively dogs (and who doesn't?) this is a book well worth looking over. It goes into considerable detail on the history of fox terriers and their breeding, as well as the matter of the breeding and rearing of terriers today. Rosters of champions are given in two appendices.

*Science News Letter, May 21, 1938*